

Intel[®] SATA Solid State Drive Firmware Update Tool

Guidelines
Version 3



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1.0 Overview

1.1 Purpose

This document describes how to update the firmware on the following solid state drives (SSDs):

- Intel® X18-M and X25-M SATA SSDs – all capacities (34nm, silver case)
- Intel® X18-M and X25-M SATA SSDs – all capacities (50nm, black case)
- Intel® X25-E SATA SSDs – all capacities (50nm, black case)

For Microsoft Windows* and Linux* operating systems, please follow the firmware update instructions in [Section 3](#). For Apple Mac OS* systems, please refer to [Section 4](#).

The firmware update process involves four simple steps:

1. Perform the setup

Prior to updating the SSD firmware, perform such activities as backing up your data and closing all other applications.

2. Download the Firmware Update Tool to a CD-R

The tool is a self-contained firmware update package formatted as an ISO image on a CD-R.

3. Run the Firmware Update Tool

When installed into a host system, the CD-R boots its own DOS environment and runs the necessary firmware update software to modify your Intel SSD.

4. Verify the update

Rescan your Intel SSDs to display the firmware information for each drive—the data should match the firmware number identified in the *Release Notes* document.

1.2 System Requirements

To use the Firmware Update Tool, you will need the following items:

- Intel SATA SSD
- Host system with a Read/Writable (R/W) CD-ROM Drive
- ISO image burning software usually provided with R/W CD-ROM Drive
- Blank CD-R
- A charged battery, if the update occurs on a mobile system

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2.0 Known Issues

2.1 RAID Platforms

The Firmware Update Tool does not support updating SSDs in systems using RAID. For RAID systems only, use the following instructions:

1. Back up your data before performing the following steps
2. Perform setup as described in Section 3.1
3. Burn the ISO image to a CD-R
 - Note:** The RAID must be disabled by using BIOS in order to update the drives. Do not use the Intel Matrix Storage Manager or any other software based RAID manager to disable the RAID option.
4. Using BIOS, turn off RAID by enabling "Legacy" or "Compatibility" mode, save and reboot
5. Run the Firmware Update Tool
6. Verify firmware update
7. Using BIOS, re-enable RAID for both drives, save and reboot

2.2 Nvidia* Chipsets

Some Nvidia* chipset-based systems, including Apple Macintosh* computers using Nvidia chipsets, do not recognize an Intel X25-M SATA SSD (50nm, black case) with 8610 firmware. To update this SSD, use the following instructions:

1. Remove the Intel X25-M SATA SSD from the system.
2. Complete the firmware update on a non-Nvidia system.
3. After a successful firmware update, reinstall the Intel X25-M SATA SSD in the Nvidia-based system.
4. Reboot the Nvidia-based system.

2.3 Micro-Star International Company* (MSI) K9A2 Motherboard

If your system uses the MSI K9A2 motherboard, the Firmware Update Tool cannot detect SSDs on ports 3, 4, 5 and 6. Only ports 1 and 2 are visible. Please place your SSD on port 1 or 2 before running the Firmware Update Tool.

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3.0 Microsoft Windows*/Linux* Instructions

3.1 Perform the Setup

Complete the following steps before starting the firmware update process on the PC containing the SSD.

1. Back Up the SSD

Perform a complete system backup on your Intel SSD to ensure that no data is lost during the firmware update process. Intel is not responsible for any data loss that might occur during or after a firmware update to a SSD.

Following a successful firmware update, data restoration should not be required.

2. Plug In the Power

For mobile PCs, ensure the computer's battery is fully charged. For desktop PCs, ensure your system is plugged into AC power during the update process. Do not remove power at any time during the firmware update process as this could produce incomplete results and may render your Intel SSD unusable.

3. Turn Off the Drive Password Protection

Some systems provide the ability to password protect their drives. If your system has password protection enabled, the Intel SSD may reject any requests from the host to update the firmware. You may need to turn off the drive password protection prior to beginning the firmware update process.

Although it varies from system to system, you can usually find the Drive Password Protection feature located in the BIOS. Please consult your system's documentation for the BIOS settings and passwords.

If you are still unsure or need help disabling the drive password protection feature, please contact Intel Customer Support at the following website: <http://www.intel.com/go/ssdsupport>

4. Check the Boot Order

As a default, most systems will boot from the R/W CD-ROM drive before the system drive. To determine the boot order for your system, reboot and enter BIOS Setup. Depending on the BIOS vendor, look for a parameter named **Boot Device Priority** or **Boot Load Order**. Now ensure that the system boots the CD-ROM drive before the drive that contains the OS.

For more information on how to set the CD-ROM drive boot order, please consult the system documentation for your PC.

If you still need additional assistance checking the boot order, please contact Intel Customer Support at the following website: <http://www.intel.com/go/ssdsupport>

5. Close All Other Applications

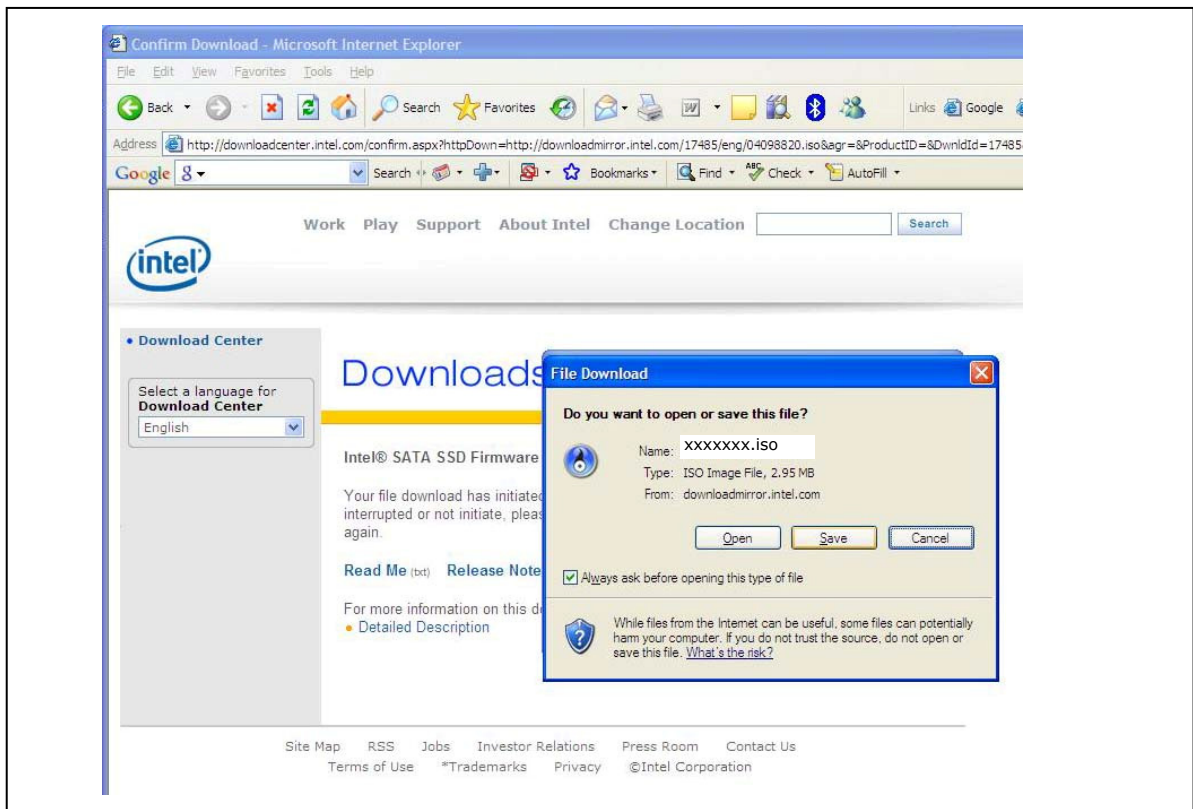
Before beginning the firmware download process, close all other applications except for your Internet browser.

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3.2 Download the Firmware Update Tool to CD-R

1. Go to the [Intel download website](http://www.intel.com/go/ssdfirmware) located at <http://www.intel.com/go/ssdfirmware>.
2. Review the *Read Me.txt* file to better understand the firmware update process. The *Read Me* file contains high level instructions for using the Firmware Update Tool.
3. Review the *Release Notes* document for a quick summary of the firmware changes for each product.
4. Click **Download** to display the terms of the license agreement. (The *Read Me.txt* file also includes the license agreement information.) After reading the agreement, click **ACCEPT** (at the bottom of the page) to display the web page with the download firmware link.
5. Click **Intel SATA SSD Firmware Update Tool** and the browser will prompt you to select **Open**, **Save** or **Cancel**. See Figure 1 to view a sample screen.

Figure 1. Download the ISO Image



NOTE: Your screen will display the name of the current firmware update image file (xxxxxxx.iso).

6. Click **Open** to download the file.



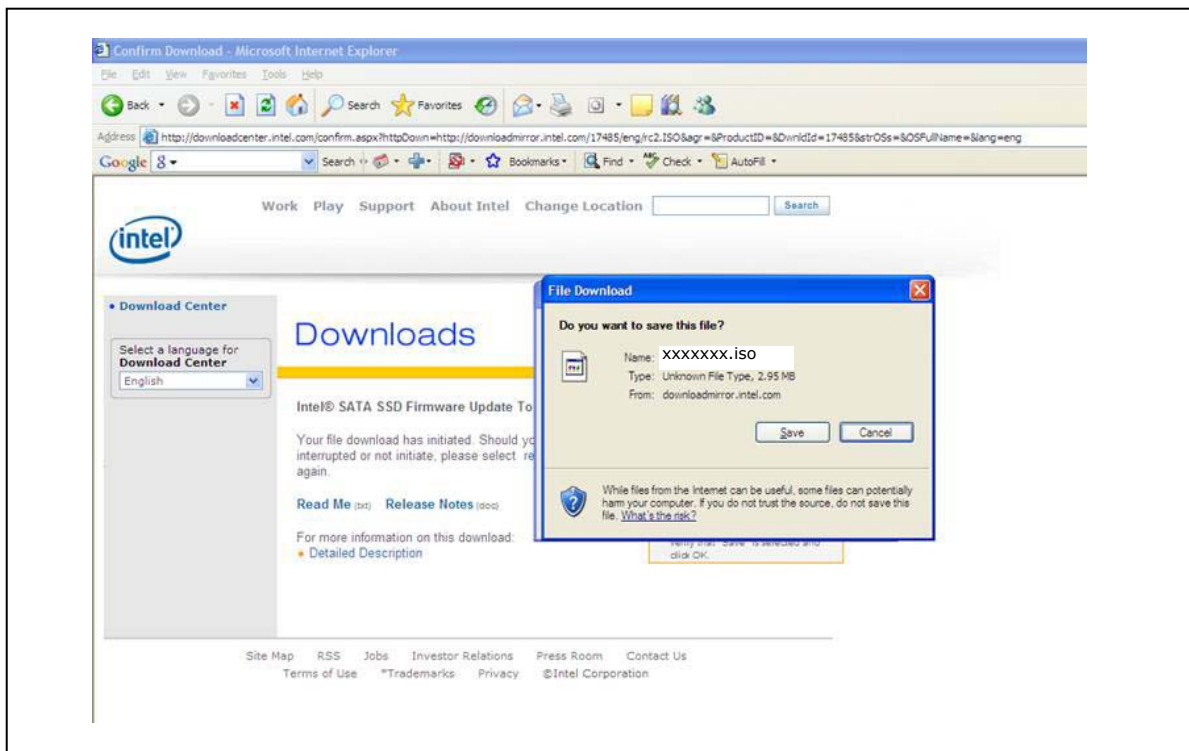
7. Your Read/Write CD-ROM drive software will guide you through the process of burning an ISO image. For more information, see [Section 5.0 Additional Information - How to Burn the ISO Image Using Microsoft Windows* or Linux* OS](#).

Notes: Similar to an archive file and analogous to a disk image, an ISO image is specifically used for optical disks like CD-Rs in a format specified by the International Organization for Standardization (ISO).

You cannot just copy an ISO image to a blank CD-R. It will just appear as a data file and not work correctly. The ISO image contains all the files for the Firmware Update Tool; it must be decoded with software and installed onto a CD-R.

8. If your R/W CD-ROM software does not recognize ISO images, you may see a screen similar to Figure 2.
 - Click **Save** to download the ISO image to your drive.
 - Locate a software package on the internet that burns ISO images. Install the application.
 - Double click the ISO image on your drive to decode the image and burn the Firmware Update Tool onto the CD-R.

Figure 2. R/W CD-ROM Software Does Not Recognize ISO Images



NOTE: Your screen will display the name of the current firmware update image file (xxxxxxx.iso).

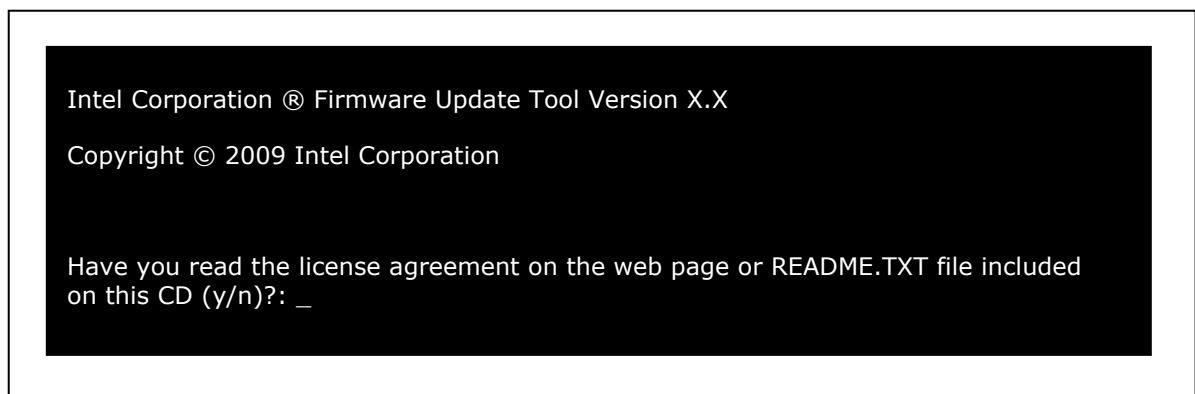
3.3 Run the Firmware Update Tool

After creating the ISO image CD-R, turning off Drive Password Protection, designating the CD-ROM drive to boot first or prior to the OS drive, fully charging the battery (for mobile) and plugging the power cable into the wall, you are ready to begin your firmware update.

Note: If at any time during the firmware update process the program fails or your system displays a blank screen, please power down and reboot your computer. Now try running the firmware update process again. If the second attempt fails, please contact Intel Customer Support at the following website: <http://www.intel.com/go/ssdsupport>

1. Insert the CD-R containing the ISO image into the R/W CD-ROM drive.
2. Click **Shutdown** on the menu bar to safely close down and power off the system.
3. Count to 10 (seconds) once the system is completely "Off".
4. Press the "On" button to boot the system from the CD-ROM drive and automatically load FreeDOS* and start the Firmware Update Tool.
5. Let the program run until it displays the DOS screen shown in Figure 3.

Figure 3. Initial Start Screen



6. Enter "y" and press **Enter** to indicate you have read the license agreement.
7. Enter "y" and press **Enter** again to "...accept these terms of use (y/n)?:".
8. The tool scans your system for Intel SSDs and displays a screen similar to the one shown in Figure 4. If your system contains more than one Intel SSD, the tool will display the first one it encounters.

Note: If the tool does not find an Intel SSD, the program will display the following error message:

Intel SSD is not attached or is disabled.

If you know an Intel SSD is installed and correctly connected to your system, please contact Intel Customer Support for further assistance at the following website: <http://www.intel.com/go/ssdsupport>.

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**Figure 4. Scanning for Intel SATA SSDs**

NOTE: This figure shows an example of the screen displayed during a firmware update.

9. Enter "**y**" and press **Enter**. The tool will display a warning screen as shown in Figure 5.

Figure 5. Warning Screen

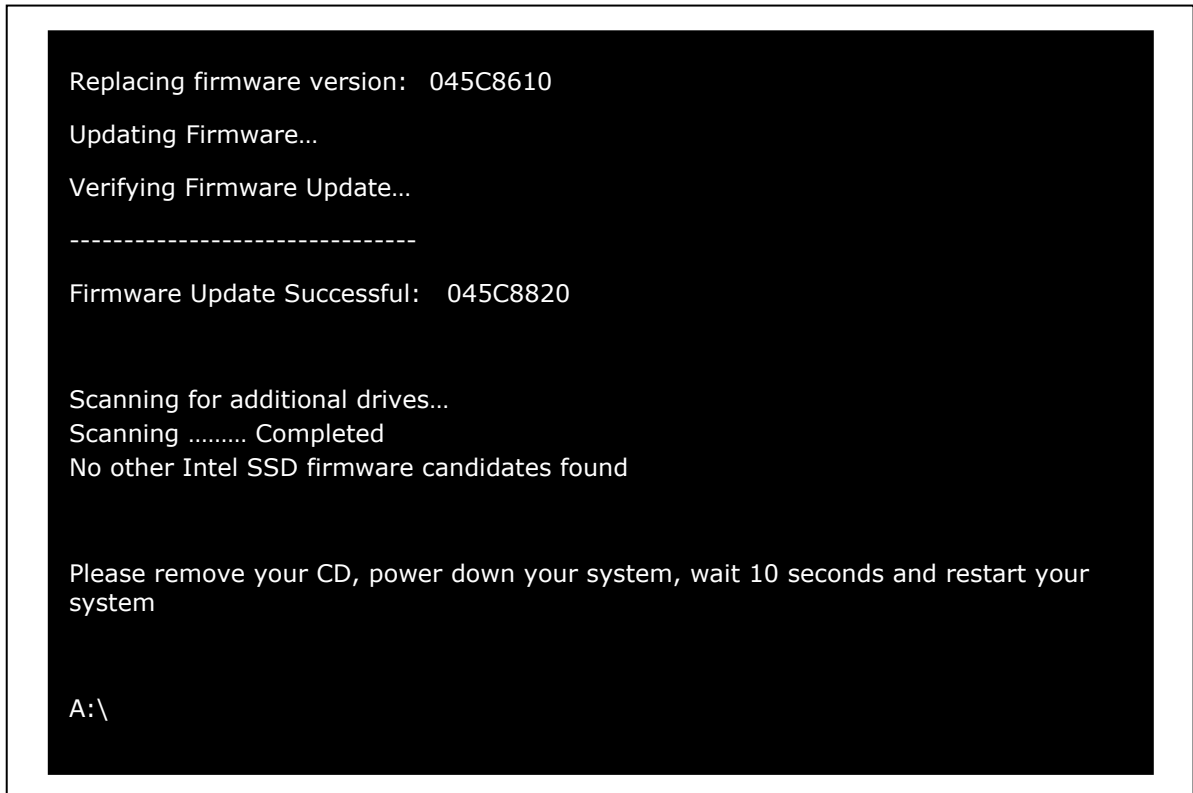
10. **It is critical that you do not remove power or reboot your system during this phase of the update.** Doing so will produce unpredictable results and may render your SSD inoperable.

Enter a "**y**" and press **Enter** to proceed with the update. It can take from 30 seconds up to two minutes to update the firmware on your SSD.



11. Once the update is complete, the tool will display the screen shown in Figure 6. Write down the firmware number for the updated SSD—you will use this information during Step 6, Section 3.4. In the example below, you would record "045C8820".

Figure 6. Firmware Update Successful



NOTE: This figure shows an example of the screen displayed during a firmware update.

Upon completing the firmware update, the tool then scans your system for any other SSDs. If the scan locates additional Intel SSDs, the tool will list the next Intel SSD requiring an update and prompt you to update it as well. Repeat Steps 9 through 11 to update the firmware on each Intel SSD found in your system. Remember to record the firmware number for each SSD updated.

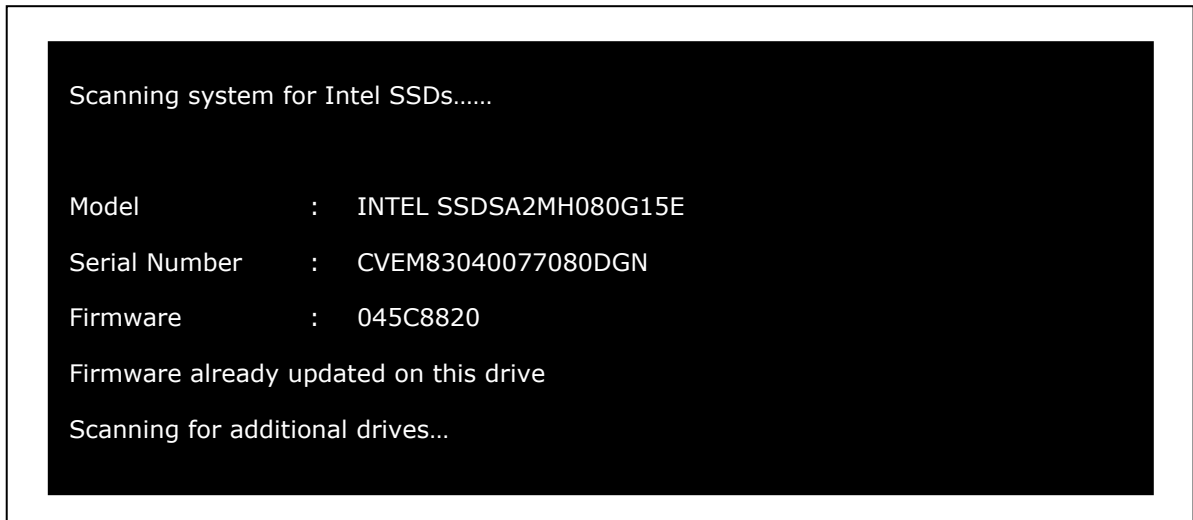


3.4 Verify New Firmware Update

You can use this optional and standalone process to verify that each Intel SSD contains the new firmware.

1. Check that the CD with the ISO image is still in the CD-ROM.
2. Shut down and power off your system.
3. Count to 10 (seconds) and reboot the system. This action will also reload the Firmware Update Tool.
4. Enter "y" and press **Enter** to indicate you have read the license agreement.
5. Enter "y" and press **Enter** again to "...accept these terms of use (y/n)?:" to reactivate the scanning process. The **Firmware** field should display the current firmware listed in the Release Notes for your drive.

Figure 7. Scanning for Additional Intel SATA SSDs



NOTE: This figure shows an example of the screen displayed during a firmware update.

6. The tool displays the firmware for each SSD. Verify that the firmware number is correct for each SSD. (Refer to the number(s) provided during Step 11 in Section 3.3.)
7. The firmware update process is now complete.
8. If applicable, see Step 7 under [Section 2.1 RAID Platforms](#) to restore RAID (if you previously changed the mode to "Legacy" or "Compatibility") on your system.
9. Reboot your system. Your system should now boot from the SSD and your native OS should load.



4.0 Apple Macintosh* Instructions

4.1 Perform the Setup

Complete the following steps before starting the firmware update process on the PC containing the SSD.

1. Back Up the SSD

Perform a complete system backup on your Intel SSD to ensure that no data is lost during the firmware update process. Intel is not responsible for any data loss that might occur during or after a firmware update to an SSD.

Following a successful firmware update, data restoration should not be required.

2. Plug In the Power

For mobile PCs, ensure the computer's battery is fully charged. For desktop PCs, ensure your system is plugged in to AC power during the update process. Do not remove power at any time during the firmware update process as this could produce incomplete results and may render your Intel SSD unusable.

3. Close All Other Applications

Before beginning the firmware download process, close all other applications except for your Internet browser.

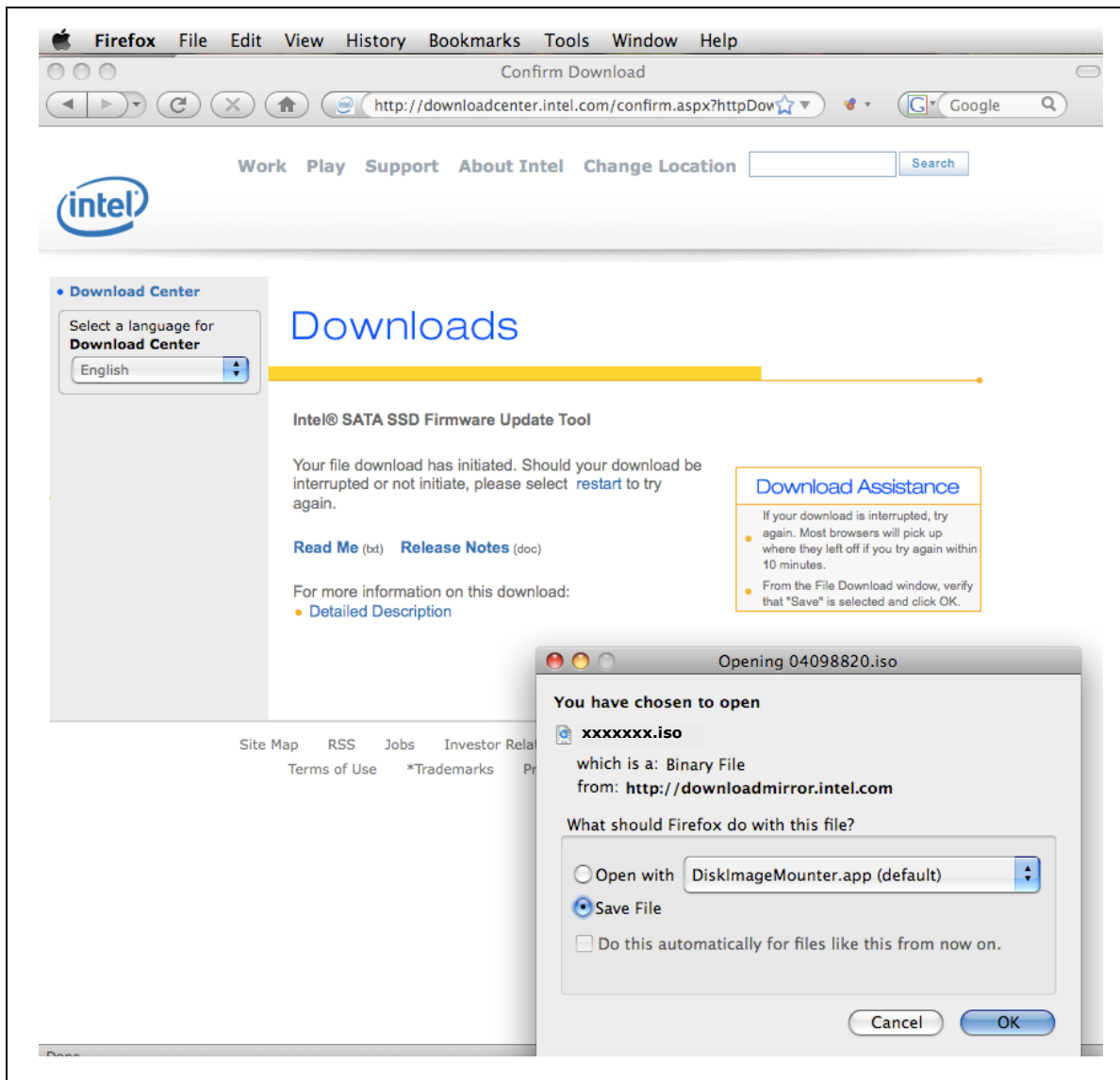
4.2 Download the Firmware Update Tool to CD-R

1. Go to the [Intel download website](http://www.intel.com/go/ssdfirmware) located at <http://www.intel.com/go/ssdfirmware>.
2. Review the *Read Me.txt* file to better understand the firmware update process. The *Read Me* file contains high level instructions for using the Firmware Update Tool.
3. Review the *Release Notes* document for a quick summary of the firmware changes for each product.
4. Click **Download** to display the terms of the license agreement. (The *Read Me.txt* file also includes the license agreement information.) After reading the agreement, click **ACCEPT** (at the bottom of the page) to display the web page with the download firmware link.
5. Click **Intel® SATA SSD Firmware Update Tool** and the browser will prompt you to select **Open**, **Save** or **Cancel** (see Figure 8).

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Figure 8. Download the ISO Image



NOTES:

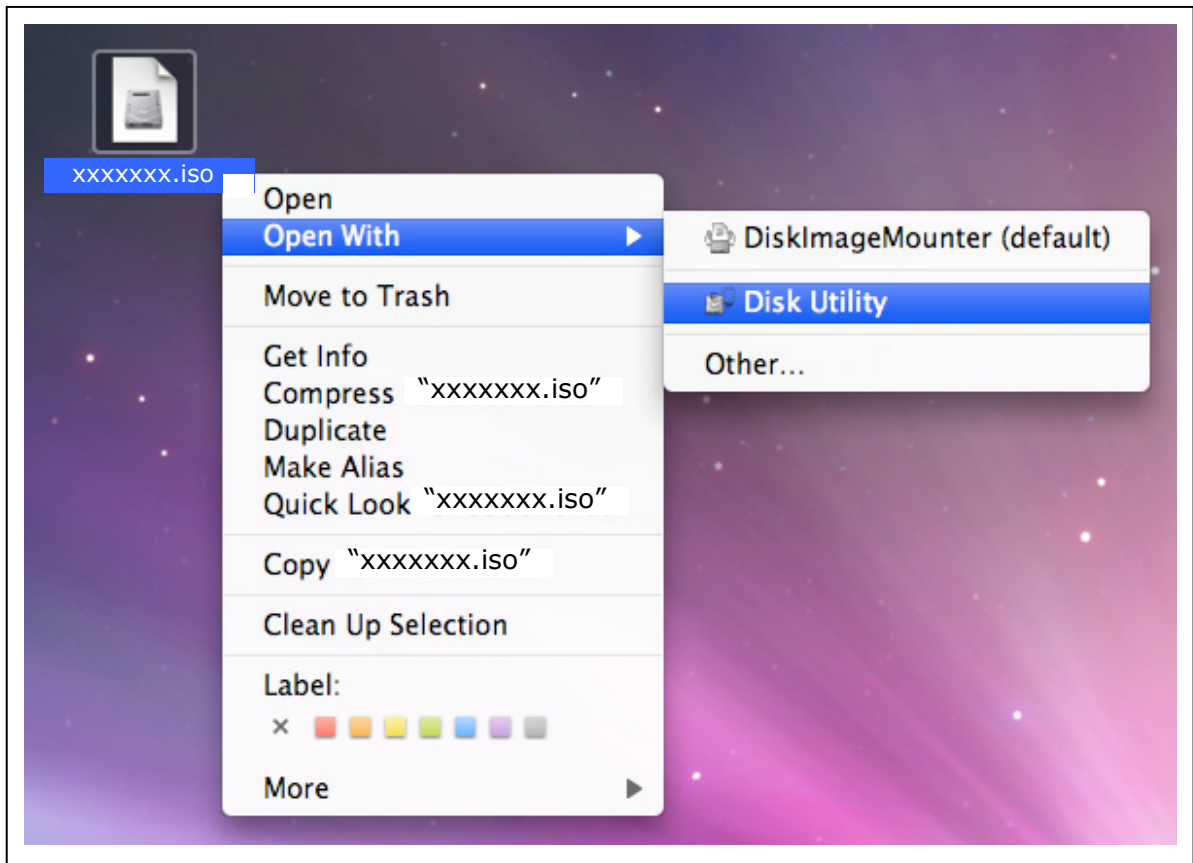
1. The Mozilla Firefox* product was used only as an example to create this screen shot and does not imply any endorsement or warranty by Intel.
2. Your screen will display the current name of the firmware update image file (xxxxxxx.iso).

6. Click **Save File** to download and save the ISO image.

7. Right click the ISO image and open **Disk Utility**. See Figure 9.

Note: You cannot save the ISO file to your hard drive and copy it to a blank CD-ROM. It will just appear as a file and not work correctly. The ISO image contains all the files for the Firmware Update Tool; it must be decoded with software and installed onto a CD-ROM.

*Other names and brands may be claimed as the property of others.

Figure 9. Selecting Disk Utility**NOTES:**

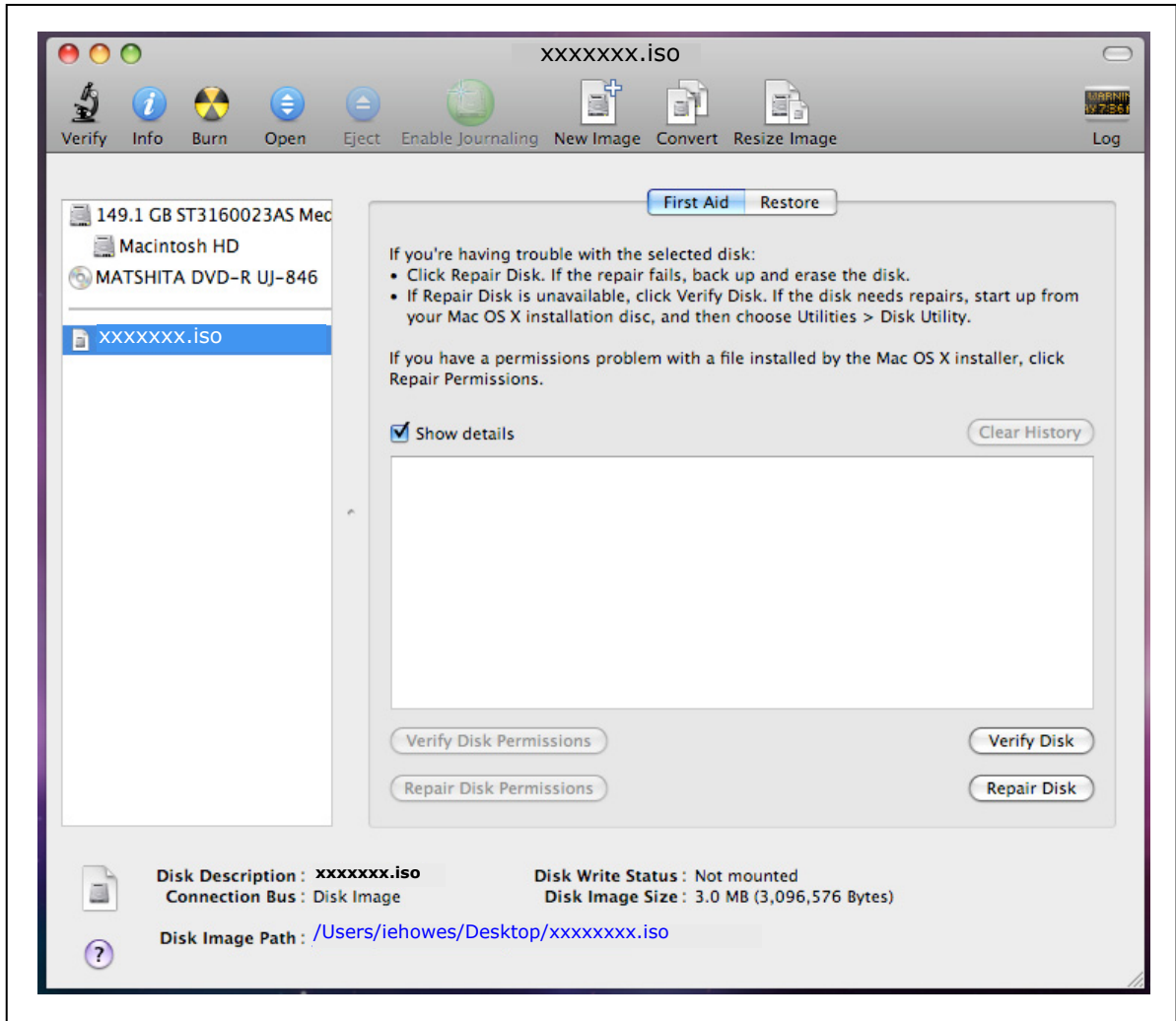
1. These Apple* products were used only as examples to create this screen shot and do not imply any endorsement or warranty by Intel.
2. Your screen will display the current name of the firmware update image file (xxxxxxx.iso).

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8. With the Disk Utility open, click on the ISO image you downloaded.
9. Click on the **Burn** button in the toolbar.

Figure 10. Using Disk Utility to Burn ISO Image



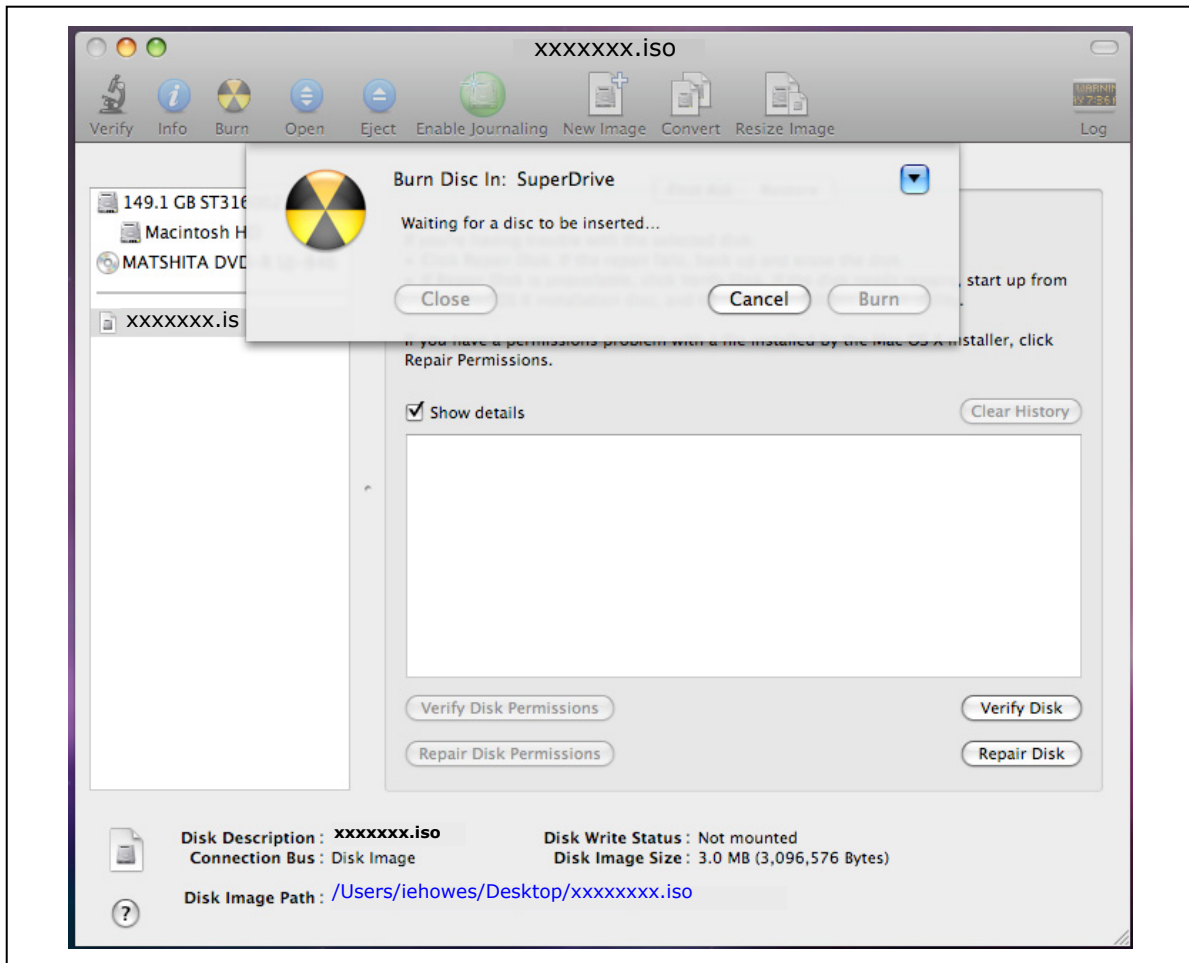
NOTES:

1. The Apple* and Matsushita* products were used only as examples to create this screen shot and do not imply any endorsement or warranty by Intel.
2. Your screen will display the current name of the firmware update image file (xxxxxxx.iso).

You will be prompted to

1. Install a blank CD-ROM.
2. Click on the **Burn** button. The application will display a status screen that is similar to Figure 11.

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Figure 11. Image Burning Process – Apple Mac OS***NOTES:**

1. The Apple* and Matsushita* products were used only as examples to create this screen shot and do not imply any endorsement or warranty by Intel.
2. Your screen will display the current name of the firmware update image file (xxxxxxx.iso).

The process of burning a CD-ROM will take approximately five minutes.

4.3 Start the Firmware Update Process

After creating the ISO image CD, fully charging the battery (for mobile) and plugging the power cable into the wall, you are ready to begin your firmware update.

Please go to [Section 3.3 Run the Firmware Update Tool](#) and follow the steps to update the firmware. You can use [Section 3.4 Verify New Firmware Update](#) to confirm that your Intel SSDs contain the new firmware—this is an optional and standalone step.

Note: Hold the “c” key down to force your system to boot from the CD-ROM drive.

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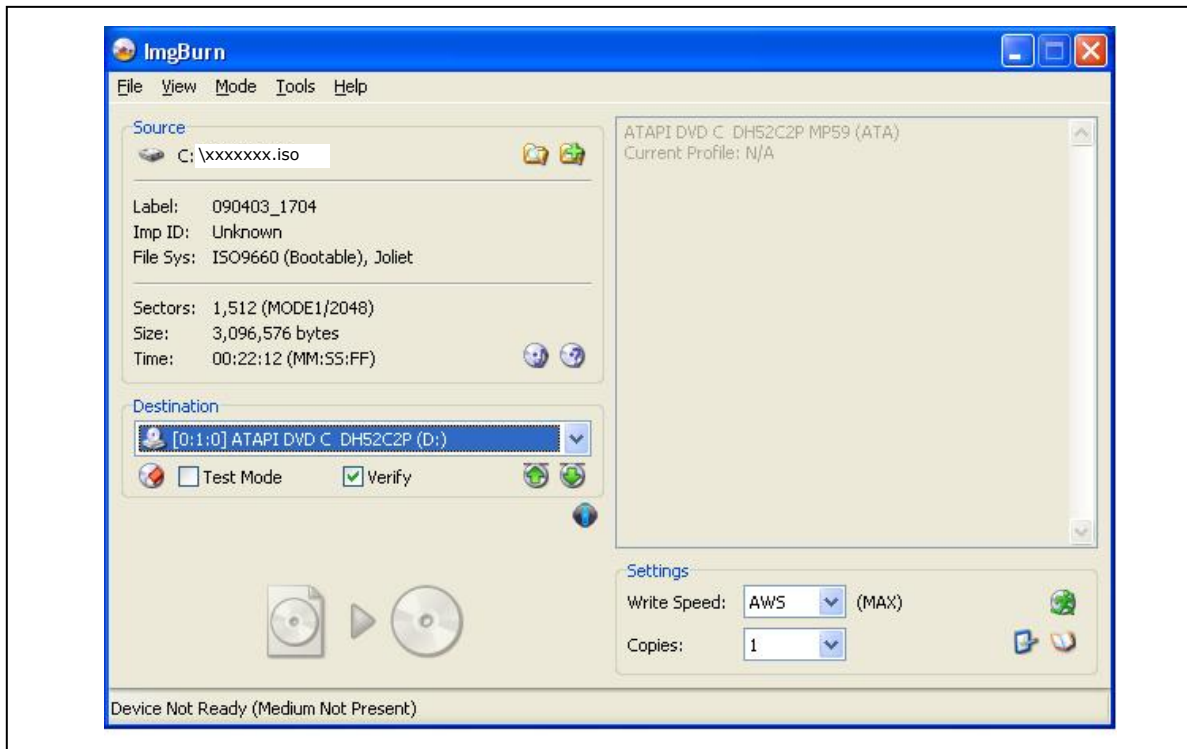


5.0 Additional Information – How to Burn the ISO Image Using Microsoft Windows* or Linux* OS

Similar to an archive file and analogous to a disk image, an ISO image is specifically used for optical disks like CD-Rs in a format specified by the International Organization for Standardization (ISO). The Firmware Update Tool image contains all the files needed to boot the CD-R and to run the firmware update process.

Once the download process begins, you may see a screen similar to the one shown in Figure 12.

Figure 12. Burning an ISO Image



NOTES:

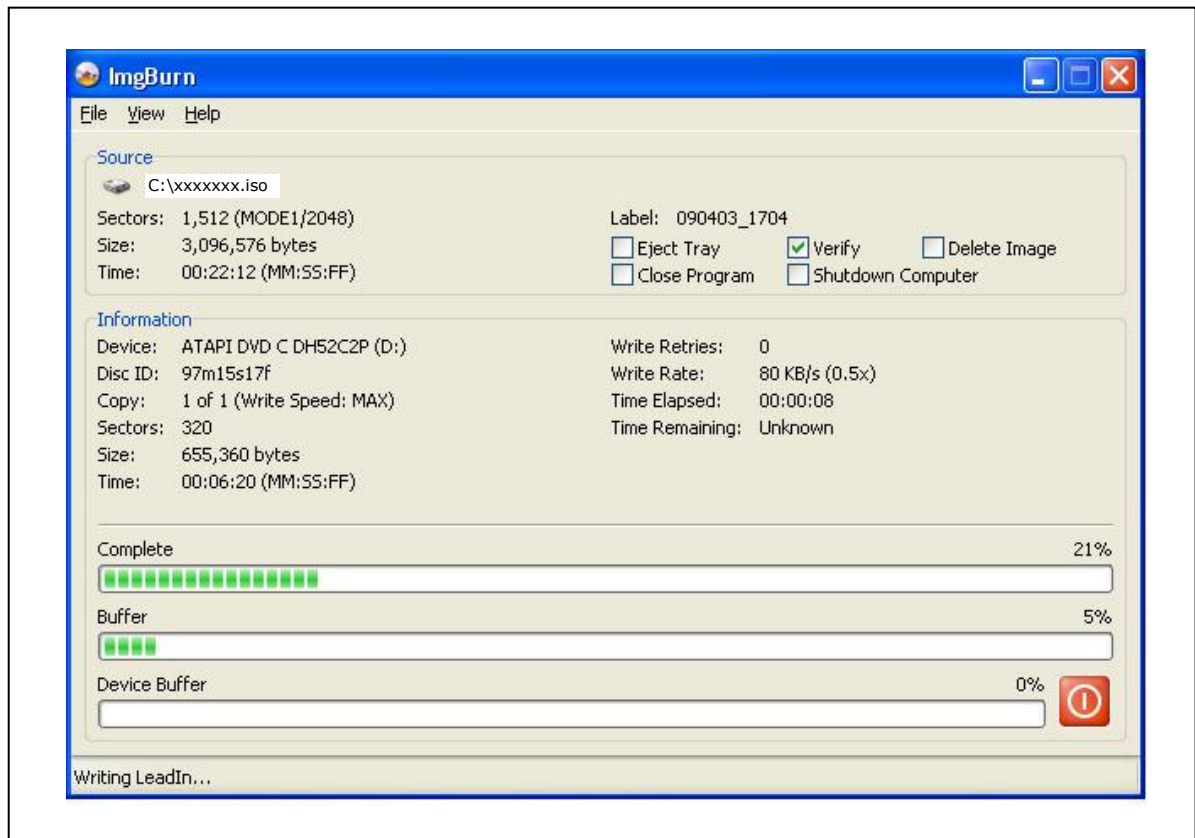
1. The ImgBurn* and ATAPI DVD* products were used only as examples to create this screen shot and do not imply any endorsement or warranty by Intel.
2. Your screen will display the current name of the firmware update image file (xxxxxxx.iso).

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You will be prompted to

1. Install a blank CD-ROM.
2. Click on the **Burn** button. The application will display a status screen that is similar to Figure 13.

Figure 13. Image Burning Process



NOTES:

1. The ImgBurn* and ATAPI DVD* products were used only as examples to create this screen shot and do not imply any endorsement or warranty by Intel.
2. Your screen will display the current name of the firmware update image file (xxxxxxx.iso).

The process of burning a CD-ROM will take approximately five minutes.

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6.0 Reference Documents

Table 1. Reference Documents

Document	Document No./Location
Intel® X25-E SATA Solid State Drive Product Manual	319984-005US
Intel® X18-M/X25-M SATA Solid State Drive Product Manual	318765-008US
Intel® X18-M/X25-M SATA Solid State Drive – 34nm Product Line Product Manual	322296-002US

7.0 Glossary

Table 2. Terms and Acronyms

Term	Description
AHCI	Advanced Host Controller Interface
ATA	Advanced Technology Attachment
ISO	International Organization for Standardization
ISO image	An archive file or disk image of an optical disc that uses the ISO format. Typically, the file has an .ISO extension; however, Apple Mac OS* ISO images often use a .CDR extension.
OS	Operating System
RAID	Redundant Array of Inexpensive Disks, also known as Redundant Array of Independent Disks
SATA	Serial ATA
SSD	Solid State Drive

8.0 Revision History

Date	Revision	Description
November 2009	003	Modified graphics version information. Modified instructions in Section 3.3 Run the Firmware Update Tool . Modified instructions in Section 3.4 Verify New Firmware Update . Modified instructions in Section 4.3 Start the Firmware Update Process .
October 2009	002	Deleted the Apple Safari* content from Section 2.0 Known Issues . The Intel SATA SSD Firmware Update Tool now works with this website. Modified various graphics to reflect the new 1.3 firmware release.
August 2009	001	Initial release.

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